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The Imperial Forestry Institute
University of Oxford

THIRTEENTH ANNUAL REPORT

1936—37

AND

PROSPECTUS

Oxford
THE HOLYWELL PRESS, LTD.
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COMMITTEE FOR THE IMPERIAL FORESTRY INSTITUTE.

(As at date of report.)

Sir E. Farquhar Buzzard, Bt., K.C.V.O. (*Chairman*).
Sir James Irvine, C.B.E., F.R.S. (*Vice-Chairman*).
Professor R. S. Troup, C.M.G., C.I.E., F.R.S.
Mr. C. G. T. Morison, Student of Christ Church.
Major R. D. Furse, C.M.G., D.S.O., Colonial Office.
Sir Gerald Trevor, C.I.E., India Office.
Sir Alexander Rodger, O.B.E., Forestry Commission.
Mr. Thomas Thomson, University College of North Wales, Bangor.
Mr. J. N. Oliphant (*Secretary*).

UNIVERSITY OF OXFORD.

THIRTEENTH ANNUAL REPORT OF THE IMPERIAL FORESTRY INSTITUTE.

ACADEMIC YEAR, 1936—37.

INTRODUCTION.

While a final solution of the problem of advanced training in forestry is not yet in sight, it is felt that some progress has been made during 1936-37 on the lines of the policy formulated by the Special Committee of the previous year and discussed in Part I of last year's report.

2. There was a good attendance of officers taking refresher courses and, in pursuance of the practice initiated last year, a number of interesting lectures were given by them on forestry conditions and activities in Bengal, British Guiana, Cyprus, Malaya, New South Wales, Nigeria, Northern Rhodesia, Palestine and Zanzibar. Mr. P. W. Richards of the Department of Botany, Cambridge, delivered three lectures during the Trinity term on his studies of tropical rain forest in British Guiana, Sarawak and Nigeria. Mr. Grasovsky of the Palestine Forest Department gave an account of his tour through Nigeria and across the Sahara to study desiccation and erosion problems; and Mr. P. Topham, now Soil Erosion Officer in Nyasaland, lectured on his visit to the United States to study land utilization and anti-erosion technique.

3. The second informal meeting of Colonial Forest Service officers on leave was held in June, and provided the occasion for a valuable discussion, initiated by Sir Frank Stockdale, Agricultural Adviser to the Colonial Office, on the part to be played by forest departments in combatting soil erosion, which has become so serious and extensive a menace in the Colonial Empire.

4. Dr. Chalk successfully completed his world tour, which included visits to the United States, Canada, British Honduras, Australia, Java, Malaya, Burma, India and Ceylon. The contacts made with forest departments and research organizations, and with workers in his own line of research, will prove very valuable to the Institute in its future work; and this opportunity may be taken of thanking all those concerned for the cordial reception everywhere extended to him.

5. The proposal that the final year of training of probationers for the Colonial Forest Service should be deferred until after an 'apprentice tour' in the Colonies to which selected candidates are assigned has been adopted by the Secretary of State.

6. The question of setting up a forestry bureau under the Imperial Agricultural Bureaux scheme remains undecided at the time of writing but, as described in the part of this report relating to the Documentation Section of the Institute, much spade-work has been done which will be useful in the event of the scheme being given effect.

7. In collaboration with the Soil Science Laboratory and the Department of Botany, a definite advance may be said to have been made towards providing suitable instruction in the relationships between soil and vegetation and their bearing on silviculture, and in the complex of biological studies included under the term ecology.

8. A tour undertaken by the Institute for the purpose of studying forestry in Finland proved highly instructive, though necessarily in the nature of a first reconnaissance. British foresters are so inured to misunderstanding and lack of appreciation of their work that a visit to a country where forestry is the principal industry, commanding the interest of the public and attracting the best brains to its service, could not fail to be stimulating. The tour has also helped to correct an impression prevalent among foresters in the Empire that the lessons to be learnt in Finland are centred mainly on utilization. This is of course very far from being the case. Finnish research on the biological aspects of forestry in general, and on silviculture in particular, is highly developed and much too little known; and the theory of forest types elaborated by Dr. Cajander, now Prime Minister of Finland, is of far reaching significance not only from the biological but from the economic standpoint, as providing, for example, the basis on which forest land in Finland is assessed to taxation. It is also the foundation for a sound and flexible system of forest management.

9. There is a close analogy between forest conditions in Finland and those of many parts of the tropics in that shifting cultivation was practised extensively in comparatively recent times and is still occasionally resorted to in remote localities. The main problem of rural economy, now successfully solved, has been the rescue from shifting cultivation of the moraine lands—which are for the most part essentially forest land and unsuited for permanent agriculture—by the substitution of mixed farming on drained moorland; and suggests an interesting parallel in the endeavours now being made in Northern Nigeria to secure more conservative utilization of land by the

encouragement of mixed farming. Some of the forest stands now to be seen in Finland are the result of deliberate use of shifting cultivation, in the sense now attaching to the Burmese term *taungya*, as a means of raising forest crops; the earliest examples of this being said to date from about 1860.

10. Apart from its bearing on tropical practice, Finnish forestry is of great significance in relation to the development of sustained yield forestry in Canada, in parts of which Dominion very similar forest conditions prevail; and the very extensive work being done on reclamation, both for forestry and agriculture, of wet moorland and swamp is of particular interest in relation to some of the planting operations of the Forestry Commission.

11. Apart from the 'conducted' tour in Finland, arrangements were made for individual touring by some of the service students. A travel grant from the Carnegie Corporation of New York enabled the forest officer from Palestine already mentioned, Mr. Grasovsky, to extend his study of erosion, and of forestry practice in arid regions, to the United States; and to return thence to Palestine via the East, paying short visits to Japan, Java, Malaya, Ceylon and India en route. He was particularly impressed with the thoroughness of the anti-erosion work seen in Japan, and India also provided examples of special significance in relation to the erosion problem in Palestine. The tour was completed after the close of the year under report.

12. A Russell Grimwade scholar from New South Wales, Mr. F. M. Bailey, during the course of a year's study at the Institute for the Diploma of Forestry, toured in France, Algeria, Morocco and, after attending the Institute tour in Finland, visited Denmark, Holland, Germany and Switzerland. On his visits to the three countries last mentioned he was accompanied by a Malay officer from the State of Johore, Inche Kosai. An Indian student, Mr. J. N. Sinha, of the Bihar forest department, visited Italy—primarily to see anti-erosion work—France, Germany and Switzerland. Messrs. Kosai and Sinha were also members of the party in Finland. All three students are returning to their respective territories via North America, where Mr. Bailey is to spend some weeks in studies of special interest in Australia, the others making shorter visits to forestry centres.

13. Messrs. Bailey and Grasovsky spent some time in visiting the operations of the Forestry Commission, and thanks are due to the officers of the Commission concerned for the facilities afforded in these cases, and also on the occasion of a visit by a party from the Institute during the Easter vacation to Commission areas in the South of England. The work of the

Commission is valuable for instructional purposes and it is hoped to make increasing use of it.

14. Present-day facilities for motor travel, both in the British Isles and on the Continent, make it much easier than it used to be to design tours suited to the requirements of individual students; but for a number of reasons, chief of which is the convenience of the forest personnel in the places visited, it is desirable that students should travel whenever possible in small parties rather than singly.

ATTENDANCE.

15. The number of students attending courses of study for the whole year or for shorter periods was nineteen. These may be classified as follows:—

			Total 1936-37	*Average of previous 5 years*
POST-GRADUATE PROBATIONERS.				
Colonies:	Gold Coast ...	1		
	Malaya	1		
	Nigeria	2		
	*Unallotted ...	1	5	6
FOREST OFFICERS UNDERGOING REFRESHER COURSES.				
Colonies:	Malaya	2		
	Nigeria	3		
	Nyasaland ...	2		
	Palestine ...	1		
	Uganda	1		
India:	Bengal	1		
	Bihar	1		
Dominions:	New South Wales	1	12	9
STUDENT UNDERGOING REFRESHER COURSE PRIOR TO APPOINTMENT.				
	Sudan	1	1	
PRIVATE STUDENTS		1	1	2
			19	17

*Died during probationary period.

16. A study tour in Finland of about four weeks duration, conducted by the Director and Mr. W. R. Day, was attended by Sir Alexander Rodger, O.B.E., of the Forestry Commission of Great Britain, three Colonial probationers, and officers on leave

from the following territories, making a party of fourteen in all:—

Bihar, British Columbia, Gold Coast, Malaya (2), New South Wales, Nigeria, Sierra Leone.

17. A short tour was also made during the Easter vacation to study ecological and soil problems in Forestry Commission areas in the New Forest, and at Wareham and Chiddingfold.

DIPLOMAS IN FORESTRY.

18. Two students, Mr. F. M. Bailey (New South Wales Forest Service), St. Catherine's Society, and Mr. A. Paterson (private student), St. Catherine's Society, satisfied the examiners and were awarded the Diploma in Forestry, the subjects of their respective theses being: 'A comparison between the forests of Southern Europe and Northern Africa and those of New South Wales, with special reference to silvicultural practice,' and 'The Occlusion of Wounds in Forest Trees.' Mr. A. Grasovsky (Palestine Forest Service), St. Catherine's Society, was registered as a Diploma Student in Michaelmas term, 1936, his special subject being 'A study of erosion control in Northern Nigeria and the Western States of America,' but owing to limitations of time the completion of his course had to be postponed until his next leave of absence from his Colony.

BOTANY SECTION.

19. Five Colonial Forest Service probationers, and a student awaiting appointment to the Sudan Forest Service, took the regular courses in Tropical Systematic Botany and Tropical Forest Ecology, and ten forest officers on leave attended the lectures on Tropical Forest Ecology, or did special work in the herbarium.

20. Identification work done (vide Appendix IV) was considerably less than usual owing to other demands on the time of the staff, and identifications for the African Colonies have fallen into arrears. Herbarium accessions and exchanges are shown in Appendices V and VI. The present number of mounted specimens filed is approximately 50,000.

21. A new genus from Nyasaland, *Burttdavya* Hoyle, was published with illustrations, in Hooker's 'Icones Plantarum' in 1936; and two new species of *Hymenodictyon* from Nigeria were described by Mr. Hoyle in the 'Journal of Botany' (see Appendix III Publications). Descriptions of nine new species and one new variety have been accepted for publication in the 'Kew Bulletin,' and four new varietal name combinations will appear in 'Tropical Woods.'

22. Progress was made with Mr. Hoyle's monographic work on the important Central African genus *Brachystegia* but pressure of other duties did not permit of its completion. Dr. Burtt Davy and Dr. Bancroft carried out a revision of the South African members of the genus *Royena* (Ebenaceae), the results of which have not yet been published.

23. A series of notes on new or noteworthy trees or shrubs ('Dendrological Notes') likely to be of interest to forest officers in the Dominions and Colonies, has been multigraphed and issued with the *Current Monthly Record* as and when sufficient material became available, approximately at intervals of three months. These notes represent information obtained by the staff in the course of its regular duties; it has not been possible to cover the whole of the literature in which new or noteworthy tree species of the British Empire have been discussed. Correspondence with the Colonies shows that the *Dendrological Notes* are proving useful.

24. Most of the time of the herbarium staff, during the last three months of 1936, was taken up with preparing for the press the 'Check-List of the Forest Trees and Shrubs of Nyasaland,' published in December, 1936. During this same period, and for some weeks afterwards, most of Mr. Hoyle's time was occupied with the 'Draft of First Descriptive Check-List of the Gold Coast,' afterwards multigraphed and distributed by the Documentation Section with the assistance of the herbarium staff.

25. A paper by Dr. Burtt Davy on *The Classification of the Primary Groups of Dicotyledons* appeared in the 'Annals of Botany.' This is the second of a series of papers designed to simplify the classification of trees for forest officers, and a third is in preparation.

26. Mr. H. L. Dunkley completed a *Handbook of the Trees and Shrubs in the Oxford University Park* which was multigraphed by the Documentation Section on behalf of the Curators of the Parks, for sale to the public.

27. A list of names of Canadian trees was submitted by the Dominions Forest Service of Canada to be brought into conformity with the International Rules of Botanical Nomenclature. This list was required for incorporation in the French edition of their illustrated Bulletin on the native trees of Canada and was brought up to date as far as possible. The nomenclature of the Poplars included in the list called for a considerable expenditure of time and lengthy correspondence with a continental botanist at work on a book on Poplars, in order that uniformity of names might be assured.

28. The International Committee on the names of economic plants, mentioned in paragraph 23 of the last annual report of the Institute, have not yet published a report, but useful work has been accomplished. Dr. Burtt Davy has recommended to the Committee that certain tree names which have been frequently misapplied, owing to vagueness of description in the first case, should be treated as *nomina ambigua* and thus relegated to obscurity.

29. Dr. Helen Bancroft, whose research work is conducted at, but not financed by, the Institute, has nearly completed her monograph on the Monotoid Dipterocarpaceae of Africa. Publication awaits receipt of a small additional collection made during the year in Angola. This collection is of importance since it is likely to add considerably to present knowledge of the origin and geographical distribution of the genus *Monotes,* and to throw light on the obscure question of its affinities and the delimitation of its species and varieties. Another valuable paper by Dr. Bancroft on the British Elms (*Ulmus* spp.) has been accepted for publication in the ' Journal of Botany.'

30. The Section is again indebted to Mrs. A. B. Gillett, Oxford, for the loan of her secretary during her absence in South Africa, to give much-needed assistance in the work of the herbarium.

31. The warm thanks of the Institute are due to Professor Tansley, F.R.S., the retiring Sherardian Professor of Botany, for much valuable help in its botanical work. The assistance rendered by the Director of Kew, and the Keeper of Botany, British Museum (Natural History), and their courtesy in giving facilities for research in the National collections under their charge, are also gratefully acknowledged.

WOOD STRUCTURE SECTION.

32. Dr. L. Chalk remained in charge of this section, with Dr. M. M. Chattaway as his assistant. During Dr. Chalk's absence in the spring and summer of 1937, Dr. Chattaway was in charge of the section. Five probationers and one private student underwent courses of instruction.

33. Mr. A. Paterson (B.Sc., Leeds) investigated the occlusion of pruning wounds in certain conifers, and presented the results of his work for the Diploma in Forestry.

34. Research into the technique of describing and identifying woods was continued, and Dr. Chattaway has collected data from over two hundred new genera that have been added to the collection. Closer collaboration with scientists working on the same problems at the Yale School of Forestry has been made

possible by the award of a Sterling Fellowship at Yale University, tenable for one year, to Dr. Chattaway; and the work will, it is hoped, be completed during 1937-38.

35. As a result of Dr. Chalk's work upon the distribution of fibres and vessel members (Institute Paper No. 2), a report was prepared by a special Committee of the International Association of Wood Anatomists, and his recommendations have been adopted for use in descriptive work.

36. Dr. Chalk completed his investigation on the phylogenetic value of certain anatomical features in Dicotyledonous woods, and the results have recently been published in the 'Annals of Botany.' Dr. Chattaway's work upon the wood anatomy of the *Sterculiaceae* (sub-family *Sterculieae*) has been accepted for the degree of D.Phil., and published by the Royal Society. A key to the identification of woods with included phloem has been prepared by Dr. Chalk and Dr. Chattaway.

37. Mr. H. E. Desch (Wood Technologist, Malayan Forest Service) and Mr. C. M. Harris (Uganda) worked in the Section during part of the year while on leave.

38. The number of identifications made during the year was forty-four specimens. Five hundred and sixty-one woods were added to the type collection, which now totals 11,872, and slides have been prepared of 256 woods. In addition, 780 specimens received from the Federated Malay States await sorting and addition to the collection. Distributions in exchange for specimens received amounted to 393 woods and 267 slides.

FOREST PATHOLOGY SECTION.

39. Mr. W. R. Day continued in charge of the Section, assisted by Mr. T. R. Peace who was occupied exclusively with work for the Forestry Commission.

40. The results of research, by means of artificial refrigeration, on the influence of accessory factors on the degree of injury caused by frost, are now appearing in 'Forestry' as a series of papers. The first two of these have already been published, and one more has yet to appear.

41. The work on races of European Larch and Scots Pine was continued. Its results have yet to be fully examined and assessed, but there is some evidence of differences in frost resistance between Scots Pine of different seed origins.

42. The work on the control of frost lift has been continued both with the aid of the refrigerator and in the garden. The results of the first season's work indicate that certain preparations of peat, when used as soil covering, are definitely helpful in controlling frost lift. Suggestions as to other protective

coverings that might prove useful have been received and will be tried experimentally. Definite conclusions cannot yet be formulated but, on present indications, useful progress has been made towards the solution of this problem.

43. The Forestry Commission Bulletin on 'Spring Frosts,' which was based mainly on data collected in connection with the mid-May frosts of 1935, has at length appeared and will, it is hoped, prove of service. In connection with this work it may be noted that the conclusion reached that frost was the prime cause of die-back and canker of Larch has been confirmed in Germany by Prof. Münch (see Das Lärchensterben, *Forstwissenschaftliches Centralblatt,* 1936), who, with others working at Munich, has demonstrated in addition that the Larch Canker Fungus plays a role that is important, though secondary to that of frost, in the development of Canker.

44. The usual annual survey of Elm Disease was made and reported on. Co-operation with Dr. Walter and Mr. Parker continues, and it is proving of great value and benefit to have them working in the University. Specimens of a special strain of Elm, which according to Dutch authorities is resistant to the disease, have been obtained from Holland by the courtesy of the Netherlands Elm-Disease Committee. Tests are being carried out on these, partly with the aid of the London County Council, and there is already evidence that they will prove resistant in this country.

45. Treatment against damping off of seedlings is still being carried on experimentally in certain Forestry Commission nurseries, but so far no satisfactory results have been obtained. The work is made difficult by the vagaries of our climate.

46. Field studies have still failed to secure satisfactory data on the life cycle of the fungus *Melampsoridium betulinum*. The problem has not been of sufficient importance to justify much attention being given to it, but will no doubt be solved in time.

47. Most of the preliminary field work on Butt Rot of conifers has been completed and Mr. Peace is now engaged in analysing the data accumulated preparatory to submitting a report. It is hoped to publish a paper dealing with this work, which deals with one of the fundamentally important problems affecting conifer plantations in Britain. Culture work on specimens sent in from many parts of the country has fully confirmed that *Fomes annosus* is at present the only important cause of Butt Rot among conifers in plantations, but a number of other fungi also occur, including *Polyporus schweinitzii, Stereum sanguinolentum, Hypholoma fasiculare*, *Clitocybe* sp., *Armillaria mellea* and *Lenzites saepiaria*.

48. Further inoculation of Japanese Chestnuts with Ink Disease have been carried out this season. When complete results are available it is proposed to summarize and publish them in a short paper. An invitation was received from M. Dufrénoy of Bordeaux, to study work on Ink Disease and plantations of Japanese Chestnut in France, but it was not possible to take advantage of it this year.

49. Mr. Day's work on silvicultural problems for the Forestry Commission made some progress, though heavy work on new lectures and on publications, and the five weeks absence necessitated by the Institute tour in Finland, prevented as much being done as could have been wished. However, material is now ready for a report, to be written as soon as time permits, on the cultivation of Poplars in the Commission plantations. A report on certain forest areas in Monmouthshire and South Wales has been completed. In the latter connection a paper by Messrs. Day and Sanzen-Baker on certain problems in forestry that arise in localities near or within industrial areas was read at the British Association Meeting in Nottingham, and provoked an interesting discussion.

50. An interesting joint survey was begun by Messrs. Peace and Hoyle into the races of Douglas Fir occurring in Forestry Commission plantations and their susceptibility to *Rhabdocline pseudotsugae*. The questions involved are important, for while in certain localities the Fraser River variety has shown indications of particular suitability, it is usually rather susceptible to the fungus named. The problem is to isolate a strain combining general suitability with resistance to the fungus, and obtain seed from it which is true to type, and as it is one of some difficulty this survey should be regarded as no more than a preliminary investigation.

51. Mr. Day gave lectures, in Hilary and Trinity terms respectively, on Elementary Statistics and Forest Hygiene. The former subject had been dealt with in previous years by Mr. J. Macdonald, while the lectures on Forest Hygiene constitute an entirely new series. They are intended to cover those biological aspects of forestry which relate to the development of health or disease, and to illustrate the bearing of silvicultural treatment on the general health of the forest.

52. There has been a considerable amount of advisory work during the year, enquiries received totalling eighty. It is not always possible to deal adequately with these, especially when circumstances preclude inspection on the spot, but on the whole the work is felt to be useful, if unspectacular.

53. Acknowledgements are again due to Mr. K. St. G. Cartwright, of the Forest Products Research Laboratory, Princes Risborough, for valuable help in the identification of the fungi isolated in the work on Butt Rot.

ENTOMOLOGICAL SECTION.

54. Dr. R. N. Chrystal remained in charge of the Section and Mr. J. M. B. Brown, Assistant Entomologist, continued to conduct research work for the Forestry Commission. Dr. Chrystal delivered a course of eight lectures on forest entomology to the Colonial probationers. Four lectures and practical demonstrations were also given to students of the School of Agriculture who wished to cover the syllabus of the Surveyors' Institution examination. In July, two lectures were given at the Forestry Commission training school at Parkend, Forest of Dean.

55. Experimental and research work under the charge of Mr. Brown included a survey of Chafers and the damage done by them in forest nurseries, and investigations on the Pine-Shoot Beetle, the Pine Weevil, and defoliation of Oak in the Forest of Dean.

56. As a first step in a comprehensive investigation of the Chafer problem, a survey was carried out of all the important nurseries of England, Wales, and Scotland, with special attention to those from which serious reports of Chafer damage have come during the past few years. The objects of the survey included definite identification of the Chafers or other insects causing damage; correlation of the abundance of various species with local features of soil, climate and vegetation; and nursery treatment. A considerable amount of information has been accumulated, and is now being studied preparatory to the compilation of a detailed report.

57. A report of the investigations on the Pine-Shoot Beetle (*Myelophilus piniperda*) in the New Forest is now in course of preparation. Most of the work was carried on in Pitts Wood Enclosure, where a good deal of information was obtained concerning the beetle population in Pine woods before, and immediately after, the first felling. Information was also obtained on the causes of the common stem deformations which appear before the abrupt increase in the beetle population generally observed at this time. The information gathered in Pitts Wood was supplemented by data from other similar areas in the New Forest.

58. A detailed report on the investigation of Oak defoliation in the Forest of Dean was presented in the spring.

59. The experiment on trapping of Pine Weevil (*Hylobius abietis*) before planting, initiated in Hawks Hill Enclosure in 1935, was carried on in accordance with a revised schedule agreed upon last December. No definite results have so far been obtained.

60. Over fifty enquiries were dealt with during the year, one of the most interesting of which was the invasion, reported from the West of England, of 'leather-jacket' larvae (*Diptera Tipulidae*) into a nursery from an adjoining field. A considerable number of young Spruce were destroyed by the larvae. The larvae of the wood-borer, *Hylecoetus dermestoides L.*, not a common insect, were found in Spruce timber in the West of England.

61. During the year, demonstration collections designed to illustrate Dr. Chrystal's new text-book, 'Insects of the British Woodlands,' were prepared, and one of these has been sent to the Foresters' School, Parkend, Lydney, Glos. This elementary text-book, which is specially designed for foresters, was published by Messrs. Frederick Warne and Co., in June, 1937.

SILVICULTURE, FOREST MANAGEMENT AND ECONOMICS.

62. Professor Troup gave a course of lectures on tropical silviculture during the Trinity term. The Director lectured in Michaelmas term on the economic aspects of forestry with special reference to the tropics.

63. Lectures on the Theory of Growing Stock and on Forest Management (with field work), given by Mr. R. Bourne during the Michaelmas and Hilary terms respectively, were attended by the Colonial probationers and certain refresher course students. Special instruction in Regional Survey and Stock-taking and in Forest Management was also given by Mr. Bourne to refresher course men, and one student in this category joined the Working Plan party during the Easter vacation at High Meadow, Gloucester.

64. The probationers and two refresher course students attended a series of lectures on air survey given by Mr. Michael Spender at the School of Geography in Hilary term.

SILVICULTURAL RESEARCH.

65. The arrangement was maintained whereby the Forestry Commission's Research Officer for England and Wales is accommodated, and has his headquarters, at the Institute, and

Mr. R. G. Sanzen-Baker continued to hold this post. No teaching duties attach to it, but the research work carried on by the Commission is of value for instructional purposes.

66. Research at Kennington Nursery included investigations on seed stratification; times and densities of sowing; the covering, conditioning and manuring of seed-beds for conifers; the raising of Walnut transplants and Poplar cuttings; and the treatment of cuttings with 'Hortomone A.' Nursery fertility and composting of weed-growth were also subjects of experiment. Facilities were afforded to Messrs. Day and Peace for their mycological work and frost-lift studies, and to Dr. Chrystal and Mr. J. M. B. Brown for work on Cockchafer damage. The nursery had many visitors, British and foreign, during the year.

67. Work in other nurseries included general research on the raising of conifers, Poplars and Willows. Progress was made with the study of Poplar cultivation in collaboration with Mr. Day.

68. The most important field investigation in progress, relating to the afforestation of industrial areas with particular reference to the South Wales and Monmouthshire coalfield, was continued, likewise in collaboration with Mr. Day; and a small trial of species was carried out at Abercarn, Monmouthshire, to discover smoke and fume-resistant trees.

69. Among other experiments were those concerned with the use of Dr. Rayner's composts in direct sowings of Pines on poor *Calluna* moorland; the establishment of Beech on chalk downland and grass heath; and provenance studies of various conifers. Routine work on sample plots continued and one new plot of Sitka Spruce was established.

SOIL SCIENCE.

70. During the Trinity term, at the request of the Institute, Mr. C. G. T. Morison gave two lectures on tropical soils, and Mr. G. R. Clarke delivered a series of lectures on the more general aspects of soil science to refresher course students and probationers. The latter series was supplemented by weekly excursions to places in the neighbourhood of Oxford, conducted by Mr. Clarke and accompanied by Mr. Day, to study the relationships between soil and vegetation. These new facilities were particularly appreciated by the refresher course men, in view of the growing interest that is being taken in soil problems overseas, and it is hoped to retain them as a regular feature of the Institute curriculum.

FOREST ENGINEERING AND UTILIZATION.

71. A short course of lectures by Mr. A. H. Lloyd, who remained in charge of this Section, on new methods of low-cost road construction in the tropics was attended by six forest officers on leave and five probationers. Mr. Lloyd also delivered six lectures on Forest Utilization at the School of Rural Economy to students taking the final examinations of the Surveyors' Institution and the Land Agents' Society.

72. A typical road project was carried out in the field and an experimental section of the new 'mix-in-place' earth road was studied on Salisbury Plain, where tests of this method are being made by the Royal Engineers.

73. An Indian forest officer on leave made a special study of river-training and timber extraction by floating and rafting, and joined a School of Forestry tour in Northern France during which he was able to study timber conversion, extraction, and new methods of sleeper and telephone pole preservation. One private student was given a special course in Forest Utilization and timber extraction, in preparation for a Diploma in Forestry.

74. Practical training in bridge construction and the uses of block and tackle, derricks and sheers, was given as usual with the Engineer Section of the University O.T.C., and four probationers also carried out ten days' field engineering in camp at Bulford.

75. In addition to the usual visits to local sawmills a study was made of local wood-using industries at Chesham in Buckinghamshire and at Huntley, Gloucester. A visit was also made to the timber yards and carriage-building shops at the G.W.R. at Swindon. Films were shown of American logging methods, by arrangement with the Caterpillar Tractor Co.

76. Instructional use was again made of the Forest Products Research Laboratory at Princes Risborough. All probationers and forest officers attending the Institute paid at least one visit to the Laboratory, and arrangements were made for short courses of study at the Laboratory for officers interested in particular subjects.

77. Experiments carried out in the extraction of tree stumps with gelignite indicated that in heavy clay soils extraction by explosives is considerably cheaper than mechanical extraction by hand winch.

78. Collection of information regarding the construction of timber houses adapted to native requirements was continued,

but the investigation cannot be brought to a satisfactory conclusion without first-hand study of conditions in the tropics.

79. Arrangements have been made with the Clarendon Press for the publication of a Forest Engineering Pocket Book which Mr. Lloyd has at present under preparation.

80. During the summer vacation an enumeration survey was made of the standing timber in a private estate forest in Westmorland, and advice was given to the owner on extraction problems. Miscellaneous enquiries during the year numbered twenty-three.

LIBRARY.

81. Books received and catalogued during the year numbered 90: pamphlets and bulletins, 600. Of periodicals, five new series were begun, three ceased publication and subscription to two was discontinued: the number of periodicals taken currently was therefore the same as for last year, 106, while the number of sets in the library stands at 139. Some long-standing gaps in sets of periodicals were filled during the year.

81. Borrowings, exclusive of literature consulted in the library, were 2,709, of which 148 were by readers outside the Department. External enquiries, involving preparation of lists of literature on specific subjects, totalled 52.

83. The issue of further parts of the *Forest Bibliography* referred to in paragraph 61 of last year's report has been taken over from the Institute by the School of Forestry. Part II. has now appeared, and Part III. (Protection) is in the press.

84. Arrangements were made to keep small stocks, for sale in the United Kingdom, of the oversea forestry periodicals 'Australian Forestry' and 'The Malayan Forester.' A system has also been initiated whereby orders for publications indexed in the *Current Monthly Record* issued by the Documentation Section can be placed with the Librarian for execution through the Institute's booksellers, and twenty-seven such orders have so far been dealt with.

85. The Librarian attended the A.S.L.I.B. Conference at Oxford in September, 1936.

86. Acknowledgements for presentations of books and other literature to the Library are due to the Chief of the Division of Silvics, United States Forest Service; the British Columbia Timber Commission, London; the Carnegie Institution of Washington; the Imperial Bureau of Soil Science, Harpenden; Cunard White Star, Ltd., Liverpool; the Rubber Growers' Association, London; the Department of Agriculture and

Stock, Division of Entomology and Plant Pathology, Brisbane; the Mahogany Association, Inc., Chicago; the Forest Products Research Laboratory, Princes Risborough; the Royal Italian Consul-General, London; the Ministero dell' Economia Nazionale, Milizia Federale, Rome; the University of Washington, Seattle; the Agricultural Experiment Station, Michigan State College, East Lansing; South Dakota State College Extension Service, Brookings; the Departamento Forestal y de Caza y Pesca, Mexico; several scientific institutions of the Government of the U.S.S.R.; the Resettlement Administration, Washington; the Professor of Forestry; the Director of the Institute; Dr. Burtt Davy; Dr. A. Grasovsky, Palestine; Mr. F. M. Bailey, New South Wales; Dr. Helen Bancroft; Dr. R. N. Chrystal; Mr. A. H. Lloyd; Mr. R. Bourne; Professor A. G. Tansley; Mr. H. S. Single; an anonymous donor in Weston-Super-Mare.

87. Twelve departments or institutions, six foreign and six British, were added to the permanent mailing list.

DOCUMENTATION SECTION.

88. The scrutiny and indexing of incoming forestry literature continued throughout the year, and the results were circulated by means of the *Current Monthly Record*. This forms a running and unclassified index of literature in the order in which it is received and examined, and classification, in accordance with the *International Decimal Classifiation No.* 634.9*F*, takes place after issue of each monthly number. Two copies are cut up and the items are pasted on cards. The appropriate decimal index numbers are added and the cards pass into the General Index, which consists of two sections arranged respectively by subject and author. The system works smoothly, and the only real difficulty lies in deciding which papers out of the great mass of material examined are worthy of permanent record.

89. For the convenience of those who use the *C.M.R.* merely for keeping themselves informed of current literature, a new feature was introduced towards the end of 1936 in the shape of a simple index arranged under 24 subject heads. This enables the items relating to particular subjects to be picked out and marked for perusal by those who are interested in them but have not time to go through the whole issue.

90. Two further issues of the half-yearly news bulletin appeared in January and July. Sufficient contributions to the latter were received from forest departments and research organizations in the Dominions to justify the starting of a

separate Dominions Section; and the bulletin, which had been at the outset a purely Colonial affair, was re-named the *News Bulletin of Empire Forest Departments*. It is intended only for departmental use but meets a real need in keeping forest officers, particularly those in isolated situations, in touch with the doings and ideas of their colleagues in other territories; and it is also useful in keeping the Institute informed of new developments overseas. It is hoped that forest departments throughout the Empire who have not so far contributed will see their way to do so: the closing dates for receipt of contributions are June 30th and December 31st.

91. The question of the setting up of a forestry bureau under the Imperial Agricultural Bureaux scheme remains undecided at the time of writing. Meanwhile the Documentation Section endeavours, in so far as finance permits, to carry out some of the functions of such a bureau. The General Index, referred to above, provides a foundation for this work, but the chief limitation is lack of staff for the detailed study of important literature, and the preparation of abstracts and translations. Some 160 abstracts were prepared or copied during the year for issue on demand, and a series of *Institute Translations* of scientific papers was initiated, of which two numbers appeared during the year. The series of translations received from the Division of Silvics, United States Forest Service, are a most valuable aid in documentation work, and the number of these received up to the end of the year under report had reached 284: details are circulated in periodical supplements to the *C.M.R.* A start was also made with the formation of a loan collection of reprints of important papers which can be sent overseas to workers wishing to study them: the collection so far totals about 50, and lists of its contents will issue from time to time.

92. The Documentation Section continued to interest itself in the possibilities of the microfilm method of making copies of documents on 35 mm. cinema film. This would certainly provide a cheap and rapid means of transmitting information to individual enquirers, as the film copies could be sent overseas by air mail; but technical difficulties, particularly in devising inexpensive viewing apparatus, do not yet appear to have been satisfactorily overcome.

93. Under the arrangements made with the International Union of Forest Research Organizations sixteen sets of bibliographical references have been received and distributed, and references to forest literature of the British Isles, India, Canada, South Africa, Nigeria, Malaya and Cyprus have been assembled, classified and issued in multigraph.

94. A substantial part of the time of the Section was occupied with work which is not strictly documentation, namely the issue of minor Institute publications in multigraphed form. Recourse has been had to this method partly owing to the inadequacy of funds available for printing, and partly to accommodate material which, while it is of interest to a small body of specialists, does not require circulation on a scale that would justify the cost of printing. It is considered that, as a rule, printing should be limited to contributions likely to have an effective circulation, including free issues, of 500 copies.

95. Multigraphed issues during the year included the *C.M.R., News Bulletin* and translation series already mentioned, eight *Institute Papers* (one since withdrawn from circulation) and one *Technical Paper*: titles of papers will be found in Appendix III. The system of issue in multigraph has since been adopted for periodical check-lists, which, during the stages in which information is accumulating rapidly, become out of date so soon that printing is rarely worth while.

FINANCE.

96. The audited accounts of the Institute will appear as usual in the *Oxford University Gazette*. An analysis of receipts and payments, designed to show the distribution of expenditure among the various sections and activities of the Institute, will be found in Appendix II. The figures in this statement have been approximated to the nearest pound. The year opened with a balance in hand of £251 and closed with a surplus of £739; and actual expenditure, exclusive of these balances, was £10,871 as against £10,263 in the previous year. Total receipts were £11,359 as against £10,804 in 1935-36. Grants from the Dominions increased by £250, whilst fees paid by students from non-contributing territories and private students amounted to £161 as against *nil* in the previous year.

97. As foreshadowed in the 1935-36 report, the Information Branch Account was closed and the balance transferred to the General Account, whence it was utilized for the work of the Documentation Section. The expenditure of this section now appears in the General Account of the Institute.

98. The 'grants in advance placed temporarily on deposit' shown last year in Capital Account now appear in the General Account.

ADMINISTRATION AND GENERAL.

99. A list of the staff at the close of the year is given in Appendix I. The post of Directer was held throughout the year by the undersigned.

100. We regret to record the resignation of Mr. R. Bourne from the staff of the Institute with effect from April 30th, 1937.

101. The Director wishes to thank Professor Troup and the staff of the Institute for their co-operation during a difficult year, and also to express his appreciation of the assistance given to the Institute in its work by other Departments of the University.

J. N. OLIPHANT,

Director

(on behalf of the Committee for the Forestry Institute).

OXFORD,

January 18th, 1938.

APPENDIX I.

LIST OF STAFF.

I. Staff engaged in instruction and research.

*Professor R. S. Troup, C.M.G., C.I.E., M.A., D.Sc. (Oxon.), F.R.S., Fellow of St. John's College. Silviculture.

J. N. Oliphant, M.A. (Oxon.), Christ Church (*Director*). Tropical forest economics and policy.

†J. Burtt Davy, M.A., D.Phil. (Oxon.), Ph.D. (Cantab.), University College. Forest botany and ecology.

A. C. Hoyle, B.Sc., M.A. (Oxon.), Pembroke College. Forest botany and ecology.

†L. Chalk, M.A., D.Phil. (Oxon.), University College. Wood structure and properties.

(Miss) M. M. Chattaway, B.Sc., M.A., D.Phil. (Oxon.), St. Hugh's College. Wood structure and properties.

†W. R. Day, B.Sc., M.A. (Oxon.), Exeter College. Pathology, forest hygiene, silviculture.

†R. N. Chrystal, D.Sc. (Edin.), Hon. M.A. (Oxon.). Forest zoology.

*†A. H. Lloyd, M.C., M.A. (Oxon.), Exeter College. Forest engineering and utilization.

II. Staff engaged solely in research for the Forestry Commission.

T. R. Peace, M.A. (Cantab.). Mycology.

J. M. B. Brown, B.Sc. (Belfast). Entomology.

R. G. Sanzen-Baker, B.Sc. (Edin.), *Forestry Commission Research Officer for England and Wales*. Silviculture.

III. Staff of other University Departments assisting in instructional work.

Professor A. G. Tansley, M.A. (Oxon.), F.R.S., (late) Sherardian Professor of Botany, Fellow of Magdalen College. Ecology.

C. G. T. Morison, M.A. (Oxon.), University Reader in Soil Science, Student of Christ Church. Soil Science.

G. R. Clarke, B.Sc., M.A., Lecturer in Soil Science, Department of Rural Economy, Oriel College. Soil Science.

H. S. Williamson, M.A. (Oxon.), Christ Church. Forest law and land tenure.

IV. Other Staff.

Documentation Section: P. S. Spokes, B.Sc., M.A. (Oxon.). The Queen's College.

Secretary: Miss C. Memmott.

Librarian: Miss G. Guiney.

Accountant: F. E. Balman.

* The Institute is responsible for approximately 18 and 52 per cent. respectively of the salaries and contingent superannuation fund contributions of Professor Troup and Mr. Lloyd.

† These members of the staff have the status of University Demonstrators, having been reappointed as such with effect from the following dates: Dr. Burtt Davy, 1.10.33; Mr. Lloyd, 1.10.34; the remainder 1.10.36.

APPENDIX II.

IMPERIAL FORESTRY INSTITUTE, 1936-37.

GENERAL ACCOUNT.

Receipts.	£	Payments.	£	£
Surplus July 31st, brought forward	251	Administration	2,118	
Grants from :—		Botany	1,724	
Forestry Commission :		Drawing Office	194	
General	2,100	Engineering	412	
Special Research ...	1,363	Entomology	846	
Colonies	5,000	Forest Management ...	147	
Dominions	700	Library	365	
Indian Provinces ...	1,000	Mycology	878	
Sudan	50	Photographic	159	
D.S.I.R.	150	Publications	115	
Schlich Memorial Fund ...	65	Silviculture	330	
Fees	161	Tours and Fees	252	
Sale of Publications ...	138	Wood Structure	1,150	
Sale of Photographs & Slides	25	Documentation	768	
Interest on Deposits held by Capital Account	529	Forestry Commission :—		
Transfer from Information Branch Account, *infra* ...	78	Mycology	794	
		Entomology	569	
		Repayment of Mortgage, *infra*	50*	
				10,871
		Surplus, July 31, 1937, carried forward :—	£	
		Accounts receivable ...	84	
		Grants due	230	
		Cash at Bank ...	82	
		Amount held by Univ. Chest	3,102	
		Cash on deposit ...	1,959	
			5,457	
		Less Grants in advance	4,663	
		Accounts owing ...	55	
			4,718	
				739
	£11,610			£11,610

INFORMATION BRANCH ACCOUNT.

	£		£
Balance, July 31, 1936, brought forward from last account	78	Transfer to General Account, *supra* ...	78
	£78		£78

CAPITAL ACCOUNT.

	£		£
Balance, July 31, 1936, brought forward from last account	24,481	Balance, July 31, 1937, carried forward to next account	24,531
General Account, *supra* ...	50*		
	£24,531		£24,531

* £900 were drawn from Capital Account in 1931-32 to pay off mortgages on premises at 6 Keble Road and 18 Museum Road, and this sum is being repaid from General Account in yearly instalments of £50.

APPENDIX III.

PUBLICATIONS, 1936-37.

BANCROFT, H. New species of *Monotes* from Angola. (*Journal of Botany*, 1936).

The Stockholm collections of fossil woods from Mount Elgon. Supplementary note. (*Geologiska Föreningens i Förhandlingar*, Vol. 58, 1936).

The Dipterocarpaceae. (*Conspectus Florae Angolensis*, Vol. 1, No. 1. Coimbra. Portugal, 1937).

BROWNE, F. G. On the 'Meranti' shot hole borer. (*Crossotarsus impar* Schedl. *Coleoptera, Platypodidae*). *Institute Paper No.* 3, 1936.

BURTT DAVY, J. On the primary groups of Dicotyledons. (*Annals of Botany*, New Series, Vol. 1, No. 3, 1937).

The Oak Problem in the New Forest. (*Empire Forestry Journal*, Vol. 15, 1936).

A note on decapitalization of epithets in plant names. (*Empire Forestry Journal*, Vol. 15, 1936).

Erigeron mucronatus DC. in Berkshire. (*Journal of Botany*, Vol. 75, 1937).

Hurricane Palms. (*Empire Forestry Journal*, Vol. 16, 1937).

The classification of Coniferae. (*Forestry*, Vol. 11, 1937).

Note on *Asteropeia* Dup.-Thouars. (*Tropical Woods*, No. 50, 1937).

Note on *Salix aliena* Flod. (*Journal of Botany*, Vol. 75, 1937).

Two suggesed *nomina ambigua*. (*Forestry*, Vol. 10, 1936).

BURTT DAVY, J., & HOYLE, A. C. *Check-lists of the forest trees and shrubs of the British Empire.*

No. 2, Nyasaland Protectorate. Compiled by the Imperial Forestry Institute in collaboration with the Forest Department of Nyasaland, 1936.

No. 3. Draft of the first descriptive check-list of the Gold Coast. Compiled by members of the Gold Coast Forest Department and revised by the herbarium staff of the Imperial Forestry Institute. (Multigraphed, 1937).

CHALK, L. The distribution of the lengths of fibres and vessel members and the definition of terms of size. (*Institute Paper* No. 2, 1936).

The phylogenetic value of certain anatomical features of Dicotyledonous woods. (*Annals of Botany,* New Series, Vol. 1, 1937).

A note on the meaning of the terms early and late wood. (*Proc. Leeds Phil. Soc.,* Vol. 3, 1937).

CHALK, L., and CHATTAWAY, M. M. Identification of woods with included phloem. (*Tropical Woods,* No. 50, 1937).

CHRYSTAL, R. N. Insects of the British Woodlands. Elementary textbook, specially designed for foresters. (*Frederick Warne and Co.,* 1937).

DAY, W. R., and PEACE, T. R. Spring Frosts. (*Forestry Commission Bulletin,* No. 18, 1937).

The influence of certain accessory factors on frost injury to forest trees. (*Forestry,* Vols. 10, 1936, and 11, 1937).

DUNKLEY, H. L. Hand-list of the trees and shrubs in Oxford University Park. Mutigraphed, 1936.

DUTHIE, D. W., HARDY, F., and RODRIGUEZ, G. Soil investigations in the Arena Forest Reserve, Trinidad. Summarized account by R. L. Brooks. (*Institute Paper* No. 6, 1937).

HOYLE, A. C. *Burttdavya nyasica* Hoyle gen. and sp. nov. (*Hooker's Icones Plantarum,* t. 3318, 1936).

Hymenodictyon oreophyton Hoyle sp. nov. and *Hymenodictyon reflexum* Hoyle sp. nov. (*Journal of Botany,* Vol. 75, 1937).

OLIPHANT, J. N. The development of more intensive use of mixed tropical forests. (*Empire Forestry Journal,* Vol. 16, 1937).

SHAW, N. The forests of Manchuria. (*Institute Paper* No. 4, 1936).

SYMINGTON, C. F. Undesirable splitting of genera. (*Chronica Botanica,* Vol. 3, 1937, and *Empire Forestry Journal,* Vol. 16, 1937—through J. Burtt Davy).

TOPHAM, P. Notes on soil erosion in the United States. (*Institute Paper* No. 8, 1937).

TOPHAM, P. and TOWNSEND, R. G. G. Forestry in Nyasaland. (*Institute Paper* No. 5, 1937).

APPENDIX IV.

BOTANICAL IDENTIFICATIONS, 1936-37.

Gambia	1
Gold Coast	61
Nigeria	153
Sierra Leone	3
Uganda	35
Kenya	13
Tanganyika Territory	191
Nyasaland	383
Northern Rhodesia	77
Southern Rhodesia	123
South Africa	51
Zanzibar	58
India	1
California	1
Forest Products Research Laboratory, Princes Risborough	323
Imperial Forestry Institute staff and various correspondents	224
	1,698

APPENDIX V.

SPECIMENS RECEIVED, 1936-37.

Herbarium.

EUROPE. *The British Isles*: Various correspondents, 174; the Forest Products Research Laboratory, Princes Risborough, 320; Dr. H. H. Bancroft, 3; Dr. L. Chalk, 1; Dr. M. M. Chattaway, 3; the Keeper of Botany, British Museum (Natural History), 2. *France*: M. T. Mouravieff, 3. *Hungary*: Mr. W. H. Guillebaud, 43. *Sweden*: Dr. Björn Floderus, 201.

ASIA. *British North Borneo*: The Conservator of Forests, per the Director, Royal Botanic Gardens, Kew, 300. *Ceylon*: The Economic Botanist, Peradeniya, 165. *India*: Dr. Ivan Klášterský, 200; Mr. C. E. Parkinson, 1. *Palestine*: The Conservator of Forests, 13.

AFRICA. *Algeria*: Mr. F. M. Bailey, 6. *Gold Coast*: The Conservator of Forests, through Mr. J. E. Andoh, 52; Mr. W. A. Gordon, 41. *Kenya Colony*: The Conservator of Forests,

through Mr. S. H. Wimbush, 172. *Nigeria*: The Chief Conservator of Forests, 10; Mr. J. W. Costello, 3; Mr. A. T. Johnstone, 28; Mr. J. D. Kennedy, 51; Mr. A. F. A. Lamb, 22; Mr. W. D. MacGregor, 3; Mr. D. R. Rosevear, 14; Mr. J. E. Taylor, 2. *Nyasaland*: The Conservator of Forests, 260; Mr. P. Topham, 9; Mr. R. G. R. Townsend, 119. *Northern Rhodesia*: Mr. R. G. Miller, 71. *Southern Rhodesia*: The Conservator of Forests, 137. *Sierra Leone*: The Conservator of Forests, through Mr. T. E. Edwardson, 26. *Tanganyika Territory*: The Conservator of Forests, 35; Mr. C. J. W. Pitt Schenkel, 50; Mr. C. E. M. Swynnerton, 2; Mr. B. D. Burtt, 150, through the Director, Royal Botanic Gardens, Kew, 193; Mr. P. J. Greenway, 533; Mr. H. J. A. Rea, 9. *Uganda*: The Conservator of Forests, 318. *Union of South Africa*: Dr. I. B. Pole Evans, Department of Agriculture and Forestry, Pretoria, 35; Mrs. A. B. Gillett, 3. *St. Helena*: Mr. K. E. Toms, 41.

AMERICA. *United States*: Miss F. Bolton, California, 2; The Director, New York Botanical Garden, Bronx Park, 10; Dr. W. R. Maxon, Smithsonian Institution, Washington, D.C., 53. *Trinidad*: The Conservator of Forests, 11.

AUSTRALIA. *East Melbourne*: Mr. H. E. Dadswell, 1.

Total: 3,901.

Wood Collection.

Hand Specimens for Type Collection.

EUROPE. *The British Isles*: Dr. L. Chalk, 2; The Forestry Commission, through Mr. J. Macdonald, 3. *Poland*: Prof. J. Rafalski, 47.

ASIA. *Malaya*: The Forest Research Institute, Kepong, through Mr. H. E. Desch, 780. *Philippine Islands*: The Bureau of Forestry, 6.

AFRICA. *Kenya*: The Conservator of Forests, 7. *Madagascar*: through Mr. E. W. Carls, 13. *Tanganyika Territory*: through Dr. J. Burtt Davy, 1; The Conservator of Forests, 74. *Uganda*: The Conservator of Forests, through Mr. W. Eggeling, 5.

AMERICA. *Brazil*: Sr. A. Miranda de Bastos, 25. *British Guiana*: through the Forest Products Research Laboratory, Princes Risborough, 150. *Trindad*: Mr. R. L. Brooks, 1. *U.S.A.*: Prof. S. J. Record, Yale School of Forestry (various countries), 114; Mr. E. W. Carls, 40; Mr. C. H. Robinson, 31; Mr. L. Kische, 40.

APPENDIX VI.

HERBARIUM EXCHANGES, 1936-37.

British Museum (Mr. J. Ramsbottom) ...	18	2
Ceylon, Department of Agriculture (The Systematic Botanist)	—	165
Czecho-Slovakia, Národní Museum, Botanické oddĕl (Dr. I. Kláštersky) ...	—	200
Kew, Royal Botanic Gardens (Sir Arthur W. Hill)	16	493
New York Botanic Gardens, Bronx Park (Dr. H. A. Gleason)	—	10
Pretoria, Division of Botany, Department of Agriculture and Forestry (Dr. I. B. Pole Evans)	—	35
Tanganyika Territory, East African Agricultural Research Station, Amani (Mr. P. J. Greenway)	—	522
Washington, DC., The Smithsonian Institution (Dr. W. R. Maxon) ...	—	53
	34	1,480

PROSPECTUS.

Scope of Work. The Institute provides courses of advanced study; its work comprises (1) post-graduate training of probationers for the forest services and other qualified persons, (2) training of research officers in special subjects, and (3) courses for selected officers already serving.

The Institute does not undertake to provide a general training in Forestry such as is given at Universities or other centres where this subject is taught.

Admission of Students. Only persons falling within one or other of the following categories are eligible for admission to the Institute:—

(*a*) Those possessing a Degree in Forestry or a Diploma or equivalent certificate of having satisfactorily completed an approved course of training in Forestry, who have been selected as probationers for the higher branch of some forest service;

(*b*) Graduates with honours in Science who desire to become specialists in some branch of work connected with Forestry;

(*c*) Forest officers deputed by their Governments to attend courses with the view of bringing their professional knowledge up to date;

(*d*) Students of approved qualifications not included in the first three categories who are admitted on the recommendation of Overseas Governments;

(*e*) Students with a University training in Forestry who may wish to attend the Institute on their own account and at their own expense.

Note.—(1) No officer in any Public Service in the British Empire will be admitted to the Institute unless he is officially deputed by the Government under which he is serving; no application from any such officer will be considered unless it is submitted through and approved by the Head of his Department; (2) The Institute reserves the right to refuse the admission of applicants other than nominees of contributing Departments and Governments.

Names of applicants for admission should be sent, together with details of previous training and subjects which it is proposed to study, to the Director, Imperial Forestry Institute, Oxford, at least three months before the date on which it is proposed to join: the Director cannot undertake to consider applications received at shorter notice.

Terms and Vacations. The academic year begins early in October, and is divided into the following Terms and Vacations:

Michaelmas Term (eight weeks, early October to early December).
Christmas Vacation (early December to middle of January).
Hilary Term (eight weeks, middle of January to middle of March).
Easter Vacation (middle of March to end of April).
Trinity Term (eight weeks, end of April to end of June).
Long Vacation (early July to early October).

Courses of Study. Instructional facilities are being enlarged, but the position is not yet sufficiently stabilized to allow of complete revision of the particulars given below. Those desiring fuller information on refresher courses should write to the Director indicating in general terms the lines of study in which they are interested. Lecture courses on Statistical Methods in Silviculture Research (Hilary Term), Forest Hygiene (Trinity Term), and Forest Entomology (Hilary Term) have been added since the last revision of the prospectus, and a course on Soils is being arranged with the Soil Science Laboratory for Trinity Term. For a general account of the studies being undertaken by the Institute reference is invited to the Annual Report for 1936-37.

The courses of study are normally of three kinds:—

(1) For post-graduate probationers who have not yet taken up their appointments: the course ordinarily extends over one academic year, beginning October, and including practical work in part of the Easter and Long Vacations.

(2) For forest officers on leave, or others who propose to attend the Institute with the view of spending some time (normally one year) in specializing in some particular branch of work; the course of study will be adapted to individual needs, and will ordinarily begin in October.

(3) For forest officers on leave who propose to spend only part of the year on 'refresher' courses. *These should attend during the spring and summer months, and not between October and January.* The distribution of work in the more usual subjects studied in 'refresher' courses is as follows:—

Silvicultural Systems: Trinity Term, with Continental tours in Easter and Long Vacations (middle of March to middle of September).

Methods of Artificial Regeneration: Hilary and part of Trinity Terms and Easter Vacation (middle of January to end of May).

Forest Management, Regional Survey, Stocktaking and Working Plans: Easter Vacation, Trinity Term and Long Vacation (middle of March to middle of August).

Tropical Silviculture: Trinity Term (end of April to end of June).

Surveying: Trinity Term (end of April to end of June).

Forest Utilization and Engineering: (1) Special work in timber mechanics and wood seasoning and preservation at the Forest Products Research Laboratory, Princes Risborough, can be arranged at any time throughout the year.

(2) *Road Project:* Trinity Term (end of April to end of June).

Systematic Botany: (1) *Full course:* three Terms (middle of October to end of June).

(2) *Short courses:* (*a*) two Terms—Hilary and Trinity (middle of January to end of June); or (*b*) one Term, Hilary or Trinity.

Continental Tours: Easter and Long Vacations.

Persons wishing to join Continental tours are reminded that their visits should coincide with the normal tours arranged in the Easter and Long Vacations (*i.e.* the middle of March to the end of April, and early July to early October). Neither the Institute nor any member of its staff is authorized to arrange visits or to furnish introductions on behalf of persons desiring to visit Continental centres on their own account.

Subjects of a more special kind, such as Entomology, Mycology, Wood Structure, Methods of Ecological Survey, Soil Properties, etc., can be studied at times to be arranged to suit individual requirements, provided notice of not less than three months is given.

Fees. An inclusive fee of £150 will be charged for instruction for one whole year at the Institute. If the course of studies extends over less than one year, the fees charged will be £50 per Term and £2 per week for tours in the Vacations. These fees will include all charges for instruction both at Oxford and on tour, as well as for the use of apparatus, materials, library, etc., they will not include living and travelling expenses. Reduced fees may be charged in individual cases, at the discretion of the Director, to students attending the Institute at their own expense who do not belong to any Public Service.

No fees will be charged to students deputed by Governments and Departments which contribute to the funds of the Institute.

Expenses. Living expenses at Oxford during Term are roughly estimated at from £3 10*s.* to £4 10*s.* a week. Expenses on the Continent vary considerably with locality and other factors.

Membership of the University. Students of the Institute may, at their own discretion and if possessed of the necessary qualifications, be matriculated as members of the University; particulars regarding admission, expenses, etc., are given in a pamphlet entitled *General Information concerning Admission, Residence, etc.*, obtainable (post free 6½*d.*) at the Clarendon Press Depot, High Street, Oxford. Students becoming members of the University will be eligible for the Diploma in Forestry on fulfilling the conditions laid down by the University Statutes.

PUBLICATIONS ISSUED BY THE IMPERIAL FORESTRY INSTITUTE.

OXFORD FORESTRY MEMOIRS.

1. The Relation between Height Growth of Trees and Meteorological Conditions. By W. E. Hiley and Norman Cunliffe. 1922. 3*s.* 6*d.*
2. Soil Acidity and its Relation to the Production of Nitrate and Ammonia in Woodland Soils. By G. R. Clarke. 1924. 3*s.* 6*d.*
3. The Watermark Disease of the Cricket-bat Willow (*Salix caerulea*). By W. R. Day. 1924. 3*s.* 6*d.*
4. Measurements of the Cubical Contents of Forest Crops. By M. D. Chaturvedi. 1926. 10*s.* 6*d.*
5. The Physiography of Southern Nigeria and its Effect on the Forest Flora of the Country. By J. R. Ainslie. 1926. 4*s.* 0*d.*
6. The Financial Return from the Cultivation of Scots and Corsican Pines. By W. E. Hiley. 1926. 3*s.* 6*d.*
7. The Gold Coast Forest: A Study in Synecology. By T. F. Chipp. 1927. 10*s.* 0*d.*
8. The Forest Industry of Finland. By W. E. Hiley. 1928. 4*s.* 6*d.*
9. Aerial Survey in Relation to the economic Development of new Countries, with special Reference to an Investigation carried out in Northern Rhodesia. By R. Bourne. 1928. 7*s.* 6*d.*
10. Formation of Spring and Summer Wood in Ash and Douglas Fir. By L. Chalk. 1930. 6*s.* 0*d.*

11. Studies of the Sirex Parasites. By R. N. Chrystal. 1930. 5*s*. 0*d*.
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